

# sPHENIX

## Environment, Safety and Health

Director's Cost and Schedule Review  
November 9-10, 2015  
Paul Giannotti

# The ES&H Process

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How does the PHENIX Group (Physics) achieve ESSH excellence?

At the activity level (operations) :

- Safe & reliable operation of the experiment via conduct of operations in cooperation with the C-A department and compliance with procedures & technical specifications
- Manage the facility as a standard industrial facility using an industry and BNL OSH policy;
  1. Prevent work related injuries, ill health and incidents
  2. Comply with OSHA regulations and SBMS requirements
- Implement BNL program of Integrated Safety Management system (ISM) via SBMS

# ES&H Requirements

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## Requirement:

### DOE Order 413.3B

Provide management direction for cost and schedule, safeguards, security, and ESH requirements.

1. Prepare a preliminary hazard analysis report (PHAR)
2. Prepare a National Environmental Policy Act (NEPA) report

The above will follow a change control process to the C-AD Safety Assessment Document (SAD). Latest revision August 2011.

Change may or may not be required as determined by a USI screening.

# Existing Safety Assessment Document

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- The proposed sPHENIX Experiment will have most hazards previously evaluated and contained in the current C-AD Safety Assessment Document (SAD) – up for renewal 2016

Signed off **August 2011** by C-AD personnel:

- 1) ESSHQ Associate Chair (Ed Lessard)
- 2) ESSH Division Head (Ray Karol)
- 3) Radiation Safety Committee Chair (Dana Beavis)
- 4) C-AD Chairman (Thomas Roser)
- 5) Associate Laboratory Director, NPP (Steve Vigdor) \*
- 6) Deputy Director Operations, BNL (Michael Bebon) \*\*

\*Berndt Mueller

\*\*Jack Anderson

- New hazards identification & evaluation will follow the Unreviewed Safety Issue (USI) process as required by DOE Order 420.2C – Safety of Accelerator Facilities.

# SAD Contents

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- The Safety Analysis Document Chapters

ALL the ESSH issues are covered by this document

1. Introduction – Statement of C-AD Facility's mission and protection of workers, public and environment
2. Results and conclusions of the safety analysis. Evaluates only non-hazard industrial hazards
3. Site facilities and operation
4. Safety analysis – identifies ALL hazards
5. Accelerator Safety Envelope (ASE)
  - Select credited controls to – in order of priority
    - a) Passively ensure safety (example -configuration controlled shielding)
    - b) Active Control – engineered automatic interlocks are higher reliability than human action
    - c) Use Non-Credited control to prevent an event rather than control it (example – limit supply of helium to prevent oxygen < 18%)

# SAD Contents (Cont'd)

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## 6. Quality Assurance Program – Implements BNL QA program of ISM

- a. Define Work
- b. Identify Hazards
- c. Develop Controls
- d. Perform Work
- e. Feedback & Improve

## 7. Decommissioning and Decontamination Plan (future)

## 8. Resource Documentation

## APPENDIX 1 Hazards and risk Assessment Screening

# Hazard Screening Process

## The Process:

Rules – Follow DOE order 420.2B Safety of Accelerator Systems, BNL SBMS Accelerator Safety Subject area and the C-AD ESH web.

Use USI unreviewed safety issue process:



# Issues and Concerns

- ESSH Starting Point – Re-review these:

1. Ionizing Radiation \*
  2. Non-Ionizing Radiation
  3. Hazardous & Toxic Materials
  4. Bio-Hazards
  5. Chemicals
  6. Electrical Energy
  7. Magnetic Fields
  8. RF Fields
  9. Potential Energy (Pressure,Vacuum,Lifting)
  10. Kinetic (rotating, Moving Equipment)
  11. Fire
  12. Explosive/Compressed Gasses \* (Large Volumes)
  13. Natural (Wind, Earthquake)
  14. Steam
  15. Extreme Heat/Cold
  16. Confined Spaces
  17. ODH \*
  18. Lasers
- NON-STANDARD HAZARDS

Special Focus: Beryllium, Lead, Asbestos

Something New: Legionella Bacteria generated by poor maintenance in cooling towers